Complete Summary

TITLE

Venous thromboembolism (VTE): percent of patients diagnosed with confirmed VTE who received intravenous unfractionated heparin therapy doses AND had their platelet counts monitored using defined parameters such as a nomogram or protocol.

SOURCE(S)

Specifications manual for national hospital inpatient quality measures, version 3.0b. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct. various p.

Measure Domain

PRIMARY MEASURE DOMAIN

Process

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the Measure Validity page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure* is used to assess the percent of patients diagnosed with confirmed venous thromboembolism (VTE) who received intravenous (IV) unfractionated heparin therapy (UFH) doses AND had their platelet counts monitored using defined parameters such as a nomogram or protocol.

*This is a Joint Commission only measure.

RATIONALE

Unfractionated heparin (UFH) management by weight-based/activated partial thromboplastin time (aPTT) adjusted protocols have demonstrated their ability through clinical trials to achieve a therapeutic aPTT more rapidly than with

standard UFH dosing without increasing major bleeding. UFH management by nomogram/protocol has significantly advanced the use of UFH with the demonstrated ability to achieve therapeutic aPTTs more rapidly than with standard UFH dosing.

Heparin-induced thrombocytopenia (HIT) occurs more commonly in patients who receive UFH than in those who receive low molecular weight heparin. HIT is defined as an unexplained fall in platelet count (specifically, a 50% fall in platelet count from baseline, even if the platelet count remains above 150 x 10^9/L).Â Platelet counts generally begin to fall 5-10 days after the initiation of heparin therapy. Prompt recognition of HIT is important so that heparin can be discontinued and the risk of venous and arterial thrombosis minimized.Â To detect HIT, platelet counts should be measured in all patients treated with UFH at baseline, 24 hours after the initiation of therapy, and at least every other day thereafter until day 14 or until UFH is discontinued (whichever is first).

PRIMARY CLINICAL COMPONENT

Venous thromboembolism (VTE); intravenous (IV) unfractionated heparin (UFH); dosage monitoring; platelet count monitoring

DENOMINATOR DESCRIPTION

Patients with confirmed venous thromboembolism (VTE) receiving intravenous (IV) unfractionated heparin (UFH) therapy (see the related "Denominator Inclusions/Exclusions" field in the Complete Summary)

NUMERATOR DESCRIPTION

Patients who have their intravenous (IV) unfractionated heparin (UFH) therapy dosages AND platelet counts monitored according to defined parameters such as a nomogram or protocol

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE CRITERION OF QUALITY

- A clinical practice guideline or other peer-reviewed synthesis of the clinical evidence
- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

NATIONAL GUIDELINE CLEARINGHOUSE LINK

- Parenteral anticoagulants. American College of Chest Physicians evidence-based clinical practice guidelines (8th edition).

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Use of this measure to improve performance

EVIDENCE SUPPORTING NEED FOR THE MEASURE

Cruickshank MK, Levine MN, Hirsh J, Roberts R, Siguenza M. A standard heparin nomogram for the management of heparin therapy. Arch Intern Med1991 Feb;151(2):333-7. PubMed

Gunnarsson PS, Sawyer WT, Montague D, Williams ML, Dupuis RE, Caiola SM. Appropriate use of heparin. Empiric vs nomogram-based dosing. Arch Intern Med1995 Mar 13;155(5):526-32. PubMed

Hirsh J, Bauer KA, Donati MB, Gould M, Samama MM, Weitz JI. Parenteral anticoagulants: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). Chest2008 Jun;133(6 Suppl):141S-59S. [214 references] PubMed

Raschke RA, Reilly BM, Guidry JR, Fontana JR, Srinivas S. The weight-based heparin dosing nomogram compared with a "standard care" nomogram. A randomized controlled trial. Ann Intern Med1993 Nov 1;119(9):874-81. PubMed

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Accreditation
Collaborative inter-organizational quality improvement
Internal quality improvement

Application of Measure in its Current Use

CARE SETTING

Hospitals

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Measure is not provider specific

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Single Health Care Delivery Organizations

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

Heparin-Induced Thrombocytopenia (HIT) is an immune-mediated reaction to heparin that is strongly associated with venous and arterial thrombosis that is diagnosed by clinical and serologic testing that occurs in 2% to 3% of patients treated with UFH and less than 1% of patients treated with low-molecular weight heparin (LMWH).

EVIDENCE FOR INCIDENCE/PREVALENCE

Institute for Clinical Systems Improvement (ICSI). Anticoagulation therapy supplement. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2006 Apr. 49 p. [91 references]

ASSOCIATION WITH VULNERABLE POPULATIONS

Heparin-Induced Thrombocytopenia (HIT) has been described as rare (less than 0.1%) to common (incidence is greater than 1%) adverse event in certain patient populations who receive unfractionated heparin (UFH) for greater than or equal to one week.Â The frequency of HIT is variable and depends on several issues (see table below):

Risk Factor	Relative Risk (Estimate)
UFH greater than low-molecular-weight heparin (LMWH)	10 – 40
Duration of heparin (10-14 greater than 4 days)	5 - 10
Post operativeÂ (surgical greater than medical/pregnant patient)	3 - 5
Gender (female greater than male)	1.5 - 2

EVIDENCE FOR ASSOCIATION WITH VULNERABLE POPULATIONS

Gruel Y, Pouplard C, Nguyen P, Borg JY, Derlon A, Juhan-Vague I, Regnault V, Samama M, French Heparin-Induced Thrombocytopenia Study Group. Biological and clinical features of low-molecular-weight heparin-induced thrombocytopenia. Br J Haematol2003 Jun;121(5):786-92. PubMed

Lee DH, Warkentin TE. Frequency of heparin-induced thrombocytopenia. In: Warkentin TE, Greinacher A, editor(s). Heparin-induced thrombocytopenia. 3rd ed. New York: Marcel Dekker, Inc.; 2004. p. 107-48.

Warkentin TE, Levine MN, Hirsh J, Horsewood P, Roberts RS, Gent M, Kelton JG. Heparin-induced thrombocytopenia in patients treated with low-molecular-weight heparin or unfractionated heparin. N Engl J Med1995 May 18;332(20):1330-5. PubMed

Warkentin TE, Roberts RS, Hirsh J, Kelton JG. An improved definition of immune heparin-induced thrombocytopenia in postoperative orthopedic patients. Arch Intern Med2003 Nov 10;163(20):2518-24. PubMed

Warkentin TE, Sigouin CS. Gender and risk of immune heparin-induced thrombocytopenia [abstract]. Blood2002;100(Suppl 1):17a.

BURDEN OF ILLNESS

Unspecified

UTILIZATION

Heparin and warfarin are commonly involved in adverse drug events.Â Sub-therapeutic and supratherapeutic levels can lead to thromboembolic or bleeding complications that may increase the length of stay.Â The use of weight-based nomograms has increased the likelihood that therapeutic activated partial thromboplastin time (aPTT) will be achieved within the first 24 to 48 hour of therapy. Also, the risk of recurrent thromboembolism is reduced when a therapeutic level of heparin is reached quickly.

Regular monitoring of platelet counts is very important because it is the only way to ensure early recognition of HIT, so that heparin can be discontinued and the risk of thrombosis minimized.Â The timely initiation of treatment may result in a significant improvement in the associated morbidity and mortality.

EVIDENCE FOR UTILIZATION

Gandhi TK, Shojania KG, Bates DW. Protocols for high-risk drugs: reducing adverse drug events related to anticoagulants. In: Making health care safer: a critical analysis of patient safety practices. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2001 Jul 20. (Evidence report/technology assessment; no. 43).

Laster J, Cikrit D, Walker N, Silver D. The heparin-induced thrombocytopenia syndrome: an update. Surgery1987 Oct;102(4):763-70. PubMed

Raschke RA, Reilly BM, Guidry JR, Fontana JR, Srinivas S. The weight-based heparin dosing nomogram compared with a "standard care" nomogram. A randomized controlled trial. Ann Intern Med1993 Nov 1;119(9):874-81. PubMed

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Safety

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

Patients, age 18 years and older, with confirmed venous thromboembolism (VTE) receiving intravenous (IV) unfractionated heparin (UFH) therapy (see the "Denominator Inclusions/Exclusions" field)

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions
Patients with confirmed venous thromboembolism (VTE) receiving intravenous (IV) unfractionated heparin (UFH) therapy

Include *International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) Principal or Other Diagnosis Codes* of VTE as defined in Appendix A, Table 7.03 or 7.04 of the original measure documentation

Exclusions

- Patients less than 18 years of age
- Patients who have a length of stay (LOS) greater than 120 days
- Patients with *Comfort Measure Only* documented
- Patients enrolled in clinical trials
- Patients without *UFH Therapy Administration*
- Patients without VTE confirmed by diagnostic testing

RELATIONSHIP OF DENOMINATOR TO NUMERATOR

All cases in the denominator are equally eligible to appear in the numerator

DENOMINATOR (INDEX) EVENT

Clinical Condition
Institutionalization
Therapeutic Intervention

DENOMINATOR TIME WINDOW

Time window brackets index event

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions
Patients who have their intravenous (IV) unfractionated heparin (UFH) therapy dosages AND platelet counts monitored according to defined parameters such as a nomogram or protocol

Exclusions
None

MEASURE RESULTS UNDER CONTROL OF HEALTH CARE PROFESSIONALS, ORGANIZATIONS AND/OR POLICYMAKERS

The measure results are somewhat or substantially under the control of the health care professionals, organizations and/or policymakers to whom the measure applies.

NUMERATOR TIME WINDOW

Institutionalization

DATA SOURCE

Administrative data
Medical record

LEVEL OF DETERMINATION OF QUALITY

Individual Case

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a higher score

ALLOWANCE FOR PATIENT FACTORS

Unspecified

STANDARD OF COMPARISON

External comparison at a point in time
External comparison of time trends
Internal time comparison

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

This measure has undergone a rigorous process of public comment and two phases (alpha and pilot [beta]) of testing that included reliability testing.Â The pilot specifications and algorithms were tested at over 40 hospitals (5,713 cases) for six months during 2007.

EVIDENCE FOR RELIABILITY/VALIDITY TESTING

Information about the Candidate Voluntary Consensus Standards for Hospital Care, additional priorities, 2007, detailed performance measure evaluation [unpublished].

Identifying Information

ORIGINAL TITLE

VTE-4: venous thromboembolism patients receiving unfractionated heparin with dosages/platelet count monitoring by protocol or nomogram.

MEASURE COLLECTION

National Hospital Inpatient Quality Measures

MEASURE SET NAME

Venous Thromboembolism (VTE)

SUBMITTER

Centers for Medicare & Medicaid Services
Joint Commission, The

DEVELOPER

Centers for Medicare & Medicaid Services/The Joint Commission

FUNDING SOURCE(S)

All external funding for measure development has been received and used in full compliance with The Joint Commission's Corporate Sponsorship policies, which are available upon written request to The Joint Commission.

COMPOSITION OF THE GROUP THAT DEVELOPED THE MEASURE

Technical advisory panel of stakeholders. The list of participants is available at http://www.jointcommission.org/NR/rdonlyres/1A4DF024-92D7-42D0-B997-348193843D89/0/VTETechnicalAdvisoryPanel.pdf.

FINANCIAL DISCLOSURES/OTHER POTENTIAL CONFLICTS OF INTEREST

Expert panel members have made full disclosure of relevant financial and conflict of interest information in accordance with the Joint Commission's Conflict of Interest policies, copies of which are available upon written request to The Joint Commission.

ENDORSER

National Quality Forum

ADAPTATION

Measure was not adapted from another source.

RELEASE DATE

2009 Oct

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

Specifications manual for national hospital inpatient quality measures, version 3.0b. Centers for Medicare & Medicaid Services (CMS), The Joint Commission; 2009 Oct. various p.

MEASURE AVAILABILITY

The individual measure, "VTE-4: Venous Thromboembolism Patients Receiving Unfractionated Heparin with Dosages/Platelet Count Monitoring by Protocol or Nomogram," is published in "Specifications Manual for National Hospital Inpatient Quality Measures." This document is available from The Joint Commission Web site. Information is also available from the Centers for Medicare & Medicaid Services (CMS) Web site. Check The Joint Commission Web site and CMS Web site regularly for the most recent version of the specifications manual and for the applicable dates of discharge.

NQMC STATUS

The Joint Commission submitted this NQMC measure summary to ECRI Institute on September 18, 2009. This NQMC summary was reviewed accordingly by ECRI Institute on November 10, 2009.

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Date Modified: 1/4/2010